

WHAT IS CLAIMED IS:

1. A thin wall singulation saw blade for cutting hard materials, comprising:

5 a plated nickel matrix for encapsulating large diamonds and small diamonds in the same matrix,

said nickel matrix having points of the large diamonds protruding from side walls beyond the small diamonds, and

10 said small diamonds being encapsulated inside the thin wall matrix in a high-density concentration.

2. A thin wall singulation saw blade as set forth in claim 1 wherein said thin wall of said matrix is serpentine or corrugated in shape and having a depth of corrugation which is 3 to 10 times the thickness of said 5 thin walls of said matrix.

3. A thin wall singulation saw blade as set forth in claim 2 wherein the cutting area of matrix material in said side walls exceeds the total thin wall transition area between the side walls so that the side walls 5 wear slower than the area between the side walls.

4. A thin wall singulation saw blade as set forth in claim 3 wherein the saw blade becomes concave at the cutting edge and the center of the blade becomes recessed between two parallel cutting side wall blades.

5. A thin wall singulation saw blade as set forth in claim 2 wherein said saw blade further includes a large circular metal blank, and

said matrix material is provided with an 5 adapter portion for connecting the thin wall singulation saw blade to said circular metal blank.

6. A thin wall singulation saw blade as set forth in claim 2 wherein said saw blade further includes an endless flexible ribbon, and

said matrix material is provided with an 5 adapter portion for connecting the thin wall singulation saw blade to said endless flexible blade.

7. A thin wall singulation saw blade as set forth in claim 2 wherein said saw blade further includes a drill rod or pipe, and

said matrix material is provided with an 5 adapter portion for connecting a cylindrical thin wall singulation blade to said drill rod or pipe.

8. A thin wall singulation saw blade for cutting hard materials, comprising:

an inundating or corrugated shaped blade of substantially uniform thin wall thickness comprising a 5 plated matrix material,

large diamonds encapsulated in the thin walls and having small points or protrusions extending from the thin walls on both sides,

small diamonds in the thin walls between and 10 around said large diamonds,

said small diamonds being encapsulated in higher density by volume than said large diamonds, and

the depth of said inundations being greater than the thickness of said thin wall by a ratio of greater 15 than three to one.

9. The method of making a thin wall singulation saw blade, comprising the steps of:

providing a mandrel having a corrugated shape,

5 plating a uniform thin wall of matrix metal
in the presence of large diamonds,

initially plating enough matrix metal to en-
trap and hold the large diamonds in place,

10 substituting small diamonds for large dia-
monds,

plating and encapsulating the small diamonds
in the matrix material,

ceasing plating of said matrix metal before
points or protrusions of the large diamonds are covered,

15 and

removing said thin wall corrugated shaped
singulation saw blade from said mandrel with points of the
large diamonds exposed and protruding through said thin
walls.

10. The method as set forth in claim 9 wherein
the step of plating a uniform thin wall of matrix metal
comprises the step of limiting the uniform thickness wall
to one third to one tenth of the depth of the corrugated
shape.

11. The method as set forth in claim 9 which
further includes the step of initially plating a copper
layer in the presence of diamonds in the range of 50 to 80
microns, and

5 plating the copper layer to a thickness of 5
to 15 microns.

12. The method as set forth in claim 11 wherein
the step of plating and encapsulating matrix metal com-
prises plating nickel in the presence of diamonds in the
range of 3 to 18 microns, and

5 plating a nickel layer having a thickness less than said large diamonds.

13. The method as set forth in claim 9 wherein the step of plating a uniform thick wall of matrix metal comprises the step of plating a corrugated annular ring saw blade for use in a flanged clamping hub.

14. The method as set forth in claim 13 which further includes cooling the side walls of said corrugated saw blade with water when cutting.

15. The method as set forth in claim 9 which further includes the step of providing an attachment tab or flange on said thin wall saw blade, and

5 attaching said thin wall saw blade to a carrier or support.

16. The method as set forth in claim 15 wherein the step of attaching said thin wall saw blade to a carrier comprises attaching the flange to a hub, disc, rod or flexible blade.